

CLAIMS:

- Sub a1 } 1. In a fiber optic communications network having a transmitter and a receiver connected by an optical transmission line, the receiver having multiple output channels for providing signals to terminal devices, each output channel including a demodulator to detect and recover a received valid signal, and a network including at least one optical amplifier having a shutdown input, a system for detecting a disconnect in the optical transmission line comprising:
- means connected to each demodulator for sensing the presence of a received valid signal; and
  - means for detecting whether a predetermined number of received valid signals are present at a predetermined number of the multiple demodulators.
2. ~~The system of Claim 1 and further including means for activating the shutdown input of the optical amplifier if the predetermined number of received valid signals is not detected.~~
- Sub a1 } 3. The system of Claim 1 wherein said means for determining whether a predetermined number of received valid signals are present includes means for formulating a ratio of the number of received valid signals are present to the number of operational demodulators.
4. A fiber optic WDM communications network comprising: multiple wavelength transmitters and multiple wavelength receivers connected by a WDM optical transmission system;
- said multiple wave length receivers including multiple channel receivers for providing signals to terminal devices, each of said channel receivers including a demodulator to detect and recover a valid received signal, and for generating an output signal;
  - an optical amplifier coupled to said optical transmission line, said optical amplifier having a shutdown input;
  - means connected to said demodulators for sensing the absence of said valid signals,

means for determining whether a predetermined number of said valid signals are present, and for generating a shutdown signal when said predetermined number is insufficient; and

means for applying said shutdown signal to said optical amplifier shutdown input to thereby terminate optical amplifier operation.

5. The fiber optic communication network of Claim 4 wherein said determining means includes:

a counter for counting the number of said demodulators in operation, and wherein said number of valid signals is less than the predetermined majority number of operating demodulators.

sub 1 } 6. The fiber optic communication network of Claim 4 wherein said determining means includes:

means for determining whether a predetermined majority number of said demodulators have detected a valid signal and for generating a ratio of the number of valid signals present to the number of operational demodulators.

7. A method for detecting a disconnect in an optical transmission line of a fiber optic communications network having a transmitter and a receiver connected by the optical transmission line, the receiver having multiple output channels for providing signals to terminal devices, each output channel including a demodulator to detect and recover a received signal, and a network including at least one optical amplifier having a shutdown input, the method comprising:

sensing at the demodulator the presence of a valid signal; and detecting whether a predetermined number of valid signals are present at the demodulators.

8. The method of Claim 7 and further including:

activating the shutdown input of the optical amplifier if the predetermined number of valid signals is not detected.

sub 1 } 9. The method of Claim 7 wherein determining whether a predetermined number of valid signals are present includes:

formulating a ratio of the number of valid signals present to the number of operational demodulators.

add  
a1 }